4Arthroscopy | JSES KSSTA Arthroscopy 4B journals

Issue 12, May 2018

Website www.4b.4abstracts.nl

Part of www.4abstracts.com

4B Arthroscopy founders: D.P. ter Meulen, B. Lubberts

Contact 4@erasmusmc.nl

Manual The titles in the contents are hyperlinks. Use these hyperlinks and the back button underneath every abstract to navigate more easily through the document. All abstracts have a hyperlink to the website of the article. Use this hyperlink to view the article in full-text. Articles can only be accessed in full-text through a personal account or the account of an institution.

Content
May

Upper extremity

Arthroscopy
Volume 34, issue

- Slight Reduction in the Insertion Depth for an All-Suture Anchor Decreases Cyclic Displacement in the Shoulder Glenoid
- Factors Affecting Cost, Outcomes, and Tendon Healing After Arthroscopic Rotator Cuff Repair
- Modified Latarjet Procedure Without Capsulolabral Repair for the Treatment of Failed Previous Operative Stabilizations in Athletes
- A Comparison of Radiofrequency-Based Microtenotomy and Arthroscopic Release of the Extensor Carpi Radialis Brevis Tendon in Recalcitrant Lateral Epicondylitis: A Prospective Randomized Controlled Study
- Peripheral Nerve Injury After Elbow Arthroscopy: An Analysis of Risk Factors

Journal of Shoulder and Elbow Surgery (JSES)
Volume 27, issue 6

- Neer Award 2018: the effect of preoperative education on opioid consumption in patients undergoing arthroscopic rotator cuff repair: a prospective, randomized clinical trial
- Factors affecting rotator cuff integrity after arthroscopic repair for medium-sized or larger cuff tears: a retrospective cohort study
- Clinical and radiologic outcome of arthroscopic rotator cuff repair: single-row versus transosseous equivalent repair
- Arthroscopic Latarjet procedure with double-button fixation: short-term complications and learning curve analysis

Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA)
Volume 26, Issue 5

- No upper Extremity abstracts

American Journal of Sports Medicine (AJSM)
Volume 46, Issue 5

- Glenoid Bone Loss in Posterior Shoulder Instability: Prevalence and Outcomes in Arthroscopic Treatment

Journal of Bone and Joint Surgery (JBJS)
Volume 100, Issue 7 & 8

- No upper Extremity abstracts

Clinical Orthopaedics and Related Research (CORR)
Volume 476, Issue 5

- No upper Extremity abstracts

Bone and Joint Journal (BJJ)
Volume 100, issue 5

- No Lower Extremity abstracts

BACK

Lower extremity

Arthroscopy
Volume 34, issue 5

- Outcomes of Arthroscopic Management of Trochanteric Bursitis in Patients With Femoroacetabular Impingement: A Comparison of Two Matched Patient Groups
- Prospective, Observational Study of Opioid Use After Hip Arthroscopy for Femoroacetabular Impingement Syndrome
- Comparison of Clinical Outcomes After Anterior Cruciate Ligament Reconstruction Using a Hybrid Graft Versus a Hamstring Autograft
- Clinical Outcome of Arthroscopic Lateral Retinacular Release for Symptomatic Bipartite Patella in Athletes
- Clinical Outcomes After Arthroscopic Release of Patellofemoral Arthrofibrosis in Patients With Prior Anterior Cruciate Ligament Reconstruction
- Arthroscopic Ankle Arthrodesis: A 2-15 Year Follow-up Study
- Randomized Controlled Trials for Arthroscopy in Degenerative Knee Disease: Was Conservative Therapy Appropriately Tried Prior to Arthroscopy?
- Quadriceps Tendon Autograft for Primary Anterior Cruciate Ligament Reconstruction: A Systematic Review of Comparative Studies With Minimum 2-Year Follow-Up

Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA)
Volume 26, Issue 5

- The iliotibial band and anterolateral capsule have a combined attachment to the Segond fracture
- No clinical diferences between anteromedial portal and transtibial technique for femoral tunnel positioning in anterior cruciate ligament reconstruction: a prospective randomized, controlled trial
- Anatomic and non-anatomic anterior cruciate ligament posterolateral bundle augmentation affects graft function
- ACL reconstruction using 5- or 6-strand hamstring autograft provides graft's diameter bigger than 8 mm
- Increased incidence of anterior cruciate ligament revision surgery in paediatric verses adult population
- Restoring tibiofemoral alignment during ACL reconstruction results in better knee biomechanics
- Anatomic double bundle ACL reconstruction outperforms any types of single bundle ACL reconstructions in controlling dynamic rotational laxity

American Journal of Sports Medicine (AJSM)
Volume 46, Issue 5

- Effects of Arthroscopy for Femoroacetabular Impingement Syndrome on Quality of Life and Economic Outcomes

Journal of Bone and Joint Surgery (JBJS)
Volume 100, Issue 7 & 8

- No Lower Extremity abstracts

Clinical Orthopaedics and Related Research (CORR)
Volume 476, Issue 5

- No Lower Extremity abstracts

BACK

Bone and Joint Journal (BJJ)
Volume 100, issue 5

- No Lower Extremity abstracts

Miscellaneous
Clinical Orthopaedics and Related Research (CORR)
Volume 476, Issue 5

- Does the Alpha-defensin Immunoassay or the Lateral Flow Test Have Better Diagnostic Value for Periprosthetic Joint Infection? A Systematic Review

Bone and Joint Journal (BJJ)
Volume 100, issue 5

- Does virtual reality simulation have a role in training trauma and orthopaedic surgeons?

BACK

Upper extremity

Arthroscopy, Volume 34, Issue 5

Slight Reduction in the Insertion Depth for an All-Suture Anchor Decreases Cyclic Displacement in the Shoulder Glenoid

John A. Ruder, M.D., Ephraim Y. Dickinson, M.D., Nahir Habet, M.S., Richard D. Peindl, Ph.D., Donald F. D'Alessandro, M.D., James E. Fleischli, M.D.

Arthroscopy, May 2018, Volume 34, Issue 5, Pages 1384–1390

https://doi.org/10.1016/j.arthro.2017.11.014

Purpose
To determine if the depth of anchor insertion affects the biomechanical performance of a 1.5-mm all-suture anchor in glenoid bone.

Methods
A 1.5-mm all-suture anchor was tested in 8 matched pairs of human cadaver fresh-frozen glenoids. Anchors were inserted at 6 different locations and tested at 3 different depths: 21 mm (preset drilling depth), 17 mm, and 13 mm. Cyclic loading and destructive testing was performed. Displacement after 100 and 200 cycles, along with ultimate failure strength, was determined.

Results
After 100 and 200 cycles, anchors placed at 13 and 17 mm had undergone significantly less displacement than those at 21 mm ($P < .05$). No difference was observed in ultimate load to failure between anchors placed at 21 and 17 mm. However, the ultimate load to failure was significantly lower in anchors placed at 13 mm ($P < .05$). There were 5 clinical failures in anchors placed at 21 mm, one at 17 mm, and none at 13 mm.

Conclusions
The 1.5-mm all-suture anchor tested in this study has an optimal insertion depth of 17 mm, 4 mm shallower than the preset drill depth. At the optimal insertion depth of 17 mm, it underwent significantly less displacement after cyclic loading without a reduction in the ultimate load to failure.

Clinical Relevance
Given the results of this study, the optimal insertion depth for this 1.5-mm all-suture anchor is 17 mm, 4 mm shallower than the preset drill depth.

BACK

Factors Affecting Cost, Outcomes, and Tendon Healing After Arthroscopic Rotator Cuff Repair

Peter N. Chalmers, M.D., Erin Granger, M.P.H., Richard Nelson, Ph.D., Minkyoung Yoo, Ph.D., Robert Z. Tashjian, M.D.

Arthroscopy, May 2018, Volume 34, Issue 5, Pages 1393–1400

https://doi.org/10.1016/j.arthro.2017.11.015

Purpose
The purpose of this study was to simultaneously examine costs, functional outcomes, and tendon healing after arthroscopic rotator cuff repair.

Methods
This was a retrospective, single-surgeon, single-hospital study. Pre- and postoperative Simple Shoulder Test (SST), visual analog scale (VAS) pain, and American Shoulder and Elbow Surgeons (ASES) scores, and postoperative magnetic resonance images (MRIs) were obtained. Direct costs were derived using a unique, validated tool. Costs included overall total direct cost, which included facility use costs, medication costs, supply costs, and other ancillary costs.

Results
85 patients had a minimum 1-year follow-up of functional outcomes (mean of 1.24 years, range 1-3.2 years) and 56 of 85 (66%) had postoperative MRI healing data at an average follow-up of 1.3 years (range 1-3.2 years). Increased direct cost was associated with ASA class III ($P < .001$) compared with ASA class I, procedures performed at the main operative room ($P = .017$) compared with those at the surgical center, single-row repair ($P < .001$) compared with double-row repair, medium and large tear sizes ($P < .001$ and $P = .001$) compared with small tear, and increased number of anchors ($P \leq .001$ or $P < .039$ for each additional). Arthroscopic biceps tenodesis was associated with decreased improvement in SST, VAS-pain, and ASES scores ($P < .001$, .012, and .024), whereas infraspinatus atrophy and large/massive tear size was associated with decreased improvement in ASES scores ($P = .03$). Obesity ($P = .004$) and smoking ($P = .034$) were associated with greater improvement in VAS-pain scores as these were associated with decreased preoperative scores. Seventy percent of tears healed.

Conclusions
Within our study, factors that increased direct costs were outcome neutral, and factors that improved outcome were cost neutral.

Level of Evidence
Level IV, retrospective.

BACK

Modified Latarjet Procedure Without Capsulolabral Repair for the Treatment of Failed Previous Operative Stabilizations in Athletes

Maximiliano Ranalletta, M.D., Luciano A. Rossi, M.D., Agustin Bertona, M.D., Ignacio Tanoira, M.D., Gastón D. Maignon, M.D., Santiago L. Bongiovanni, M.D.

Arthroscopy, May 2018, Volume 34, Issue 5, Pages 1421–1427

https://doi.org/10.1016/j.arthro.2017.12.006

Purpose
To analyze time to return to sport, functional outcomes, and recurrences of the modified Latarjet procedure without capsulolabral repair in athletes with recurrent anterior shoulder instability after a failed previous operative stabilization.

Methods
We included athletes with recurrent anterior shoulder instability with a previous failed operative stabilization treated with the modified Latarjet procedure without capsulolabral repair with a minimum of 2-year follow-up. Return to sports, range of motion, the Rowe score, a visual analog scale for pain in sport activity, and the Athletic Shoulder Outcome Scoring System were used to assess functional outcomes. Recurrences were also evaluated. The postoperative bone block position and consolidation were assessed with computed tomography.

Results
Between June 2008 and June 2015, 68 athletes were treated with the modified Latarjet procedure without capsulolabral reconstruction for recurrent shoulder instability after a previous failed stabilization surgery. The mean follow-up was 44 months (range, 24-108 months), and the mean age at the time of operation was 26.8 years (range, 17-35 years). All the patients returned to sports, and 95% returned to the same sport they practiced before the surgery, all to the same level. No significant difference in shoulder range of motion was found between preoperative and postoperative results. The Rowe score, visual analog scale, and Athletic Shoulder Outcome Scoring System showed statistical improvement after operation ($P < .001$). There was no recurrence of shoulder dislocation or subluxation. The bone block healed in 92% of patients. There were 8 complications (12.3%) and 2 reoperations (3%).

Conclusions
In athletes with previous failed operative stabilization procedures, the modified Latarjet without capsulolabral repair produced excellent functional outcomes with most athletes returning to sport at the same level they had before the surgery without recurrences.

Level of Evidence
Level IV, therapeutic, case series study.

BACK

A Comparison of Radiofrequency-Based Microtenotomy and Arthroscopic Release of the Extensor Carpi Radialis Brevis Tendon in Recalcitrant Lateral Epicondylitis: A Prospective Randomized Controlled Study

Jae-Hoo Lee, M.D., In Park, M.D., Hwan-Sub Hyun, M.D., Sang-Jin Shin, M.D., Ph.D.

Arthroscopy, May 2018, Volume 34, Issue 5, Pages 1439–1446

https://doi.org/10.1016/j.arthro.2017.11.029

Purpose
To compare the clinical effects of radiofrequency (RF)-based microtenotomy and arthroscopic release of the extensor carpi radialis brevis (ECRB) tendon in patients with recalcitrant lateral epicondylitis through a prospective randomized controlled study.

Methods
A total of 46 patients were randomly assigned to receive arthroscopic release (group A, 24 patients) or RF-based microtenotomy (group B, 22 patients). The visual analog scale (VAS) score for pain, flexion-extension arc, operation time, Disabilities of the Arm, Shoulder, and Hand questionnaire (DASH), Mayo Elbow Performance Score (MEPS), and grip power of groups A and B were compared during the recovery phases for up to 2 postoperative years.

Results
Both groups showed statistically significant functional improvement compared with their preoperative grip strength and DASH, VAS, and MEPS scores at 2 years after surgery ($P < .05$). There were no differences in postoperative pain relief or functional restoration between the 2 groups during the recovery phases, however the mean operation time for group B (41.4 ± 5.2 minutes) was significantly shorter than that for group A (15.6 ± 3.6 minutes, $P < .001$). In group B, 1 patient underwent revision surgery due to postoperative ECRB rupture, and 1 patient in group A underwent open release for persistent postoperative discomfort.

Conclusions
RF-based microtenotomy for treating recalcitrant lateral epicondylitis provided clinical outcomes comparable with those from arthroscopic release of ECRB tendon during the recovery phase. RF-based microtenotomy is considered as one of the surgical procedures for treating recalcitrant lateral epicondylitis, with the advantages of reliable elbow functional restoration and significantly shorter operation time.

Level of Evidence
Level I, prospective randomized trial.

BACK

Peripheral Nerve Injury After Elbow Arthroscopy: An Analysis of Risk Factors

Alexander H. Jinnah, M.D., T. David Luo, M.D., Ethan R. Wiesler, M.D., Zhongyu Li, M.D., Ph.D., Gary G. Poehling, M.D., Christopher J. Tuohy, M.D., Benjamin R. Graves, M.D., Michael T. Freehill, M.D., Anastasios Papadonikolakis, M.D., Ph.D.

Arthroscopy, May 2018, Volume 34, Issue 5, Pages 1447–1452

https://doi.org/10.1016/j.arthro.2017.12.004

Purpose
To identify risk factors associated with peripheral nerve injury after elbow arthroscopy and provide an updated incidence of those complications.

Methods
The elbow arthroscopies that were performed at our institution between 2006 and 2016 were identified. Over a 10-year period, 253 elbow arthroscopies were performed at our institution. Two hundred twenty-seven cases had a minimum follow-up of 4 weeks, and were included in our analysis. Minor and major nerve-related complications were recorded. The surgeon's experience and training, body max index of the patients, surgical tourniquet time, type of anesthesia or surgery, radiographic appearance of the elbow, diagnosis at the time of surgery, and presence of diabetes were analyzed.

Results
There were 12 reported peripheral nerve injuries, 10 minor (4.4%) and 2 major complications (0.9%). The risk factors examined in this study were not correlated with a higher rate of complications.

Conclusions
The minor nerve–related complication rate was 4.4%, with a 0.9% incidence of major peripheral nerve injury. Based on these findings, we conclude that elbow arthroscopy is a relatively safe procedure. The risk factors examined in this study had no association with the rate of complications. This finding could be potentially related to type II or beta error in the analysis of risk factors for nerve injury. The exact reasons for nerve injury are not known from this study.

Level of Evidence
Level IV, retrospective case series.

BACK

Journal of Shoulder and Elbow Surgery (JSES), Volume 27, issue 6

Neer Award 2018: the effect of preoperative education on opioid consumption in patients undergoing arthroscopic rotator cuff repair: a prospective, randomized clinical trial

Usman Ali M. Syed, BS, Alexander W. Aleem, MD, Charles Wowkanech, BS, Danielle Weekes, MD, Mitchell Freedman, MD, Fotios Tjoumakaris, MD, Joseph A. Abboud, MD, Luke S. Austin, MD'Correspondence information about the author MD Luke S. AustinEmail the author MD Luke S. Austin

Journal of Shoulder and Elbow Surgery, Volume 27, Issue 6

Published online: March 26, 2018

https://doi.org/10.1016/j.jse.2018.02.039

Background
Opioids are commonly administered for the treatment of acute and chronic pain symptoms. The current health care system is struggling to deal with increasing medication abuse and rising mortality rates from overdose. Preoperative patient-targeted education on opioid use is an avenue yet to be explored. The purpose of the study was to determine whether preoperative narcotics education reduces consumption after arthroscopic rotator cuff repair (ARCR).

Methods
Patients undergoing primary ARCR at our institution were randomized to receiving opioid-related preoperative education or not. Patients filled out preoperative questionnaires detailing complete medical history and visual analog scale (VAS) for pain. Patients completed questionnaires regarding their opioid consumption and pain at their 2-week, 6-week, and 3-month follow-up.

Results
The study enrolled 140 patients. Patients in the study group consumed significantly less narcotics than the control group at the 3-month follow-up. Patients in the education group were 2.2 times more likely to discontinue narcotic use by the end of follow-up (odds ratio, 2.19; P = .03). In addition, patients with a history of preoperative narcotic use that were in the education group were 6.8 times more likely to discontinue narcotics by the end of follow-up (odds ratio, 6.8; P = .008).

Discussion/Conclusions
The findings of this study determined that preoperative education intervention significantly decreased the number of narcotic pills consumed at 3 months after ARCR. In addition, education resulted in earlier cessation of opioids; therefore, directed patient education can help alleviate the current opioid epidemic.

BACK

Factors affecting rotator cuff integrity after arthroscopic repair for medium-sized or larger cuff tears: a retrospective cohort study

Young-Kyu Kim, MD, PhD, Kyu-Hak Jung, MD'Correspondence information about the author MD Kyu-Hak JungEmail the author MD Kyu-Hak Jung, Jin-Woo Kim, MD, Ui-Seok Kim, MD, Do-Hyun Hwang, MD

Journal of Shoulder and Elbow Surgery, Volume 27, Issue 6

Published online: December 29, 2017

https://doi.org/10.1016/j.jse.2017.11.016

Background
We wished to identify the preoperative prognostic factors associated with structural integrity after repair of medium-sized and larger rotator cuff tears and to determine the cutoff values using receiver operating characteristic curve analysis.

Methods
The study included 180 patients with medium-sized and larger rotator cuff tears. Each had a minimum 2-year postoperative follow-up by magnetic resonance imaging. We assessed several patient-related and disease-related preoperative factors using univariate and multivariate logistic regression analysis. To determine the cutoff value for the significant variables, receiver operating characteristic curve analysis was performed.

Results
Retears occurred in 28 of the 180 patients (15.6%). Univariate analysis found that retear was significantly affected by the type of work and pattern of tear. The rate of retear was significantly increased in diabetes and with increasing tear size, extent of retraction, delamination, and fatty infiltration. Furthermore, reduced remnant tendon length, distance from the musculotendinous junction to the face of the glenoid, occupation ratio, and acromiohumeral interval were also significant risk factors. In the multivariate analysis, body mass index, diabetes, dyslipidemia, extent of retraction, delamination, distance from musculotendinous junction to face of glenoid, occupation ratio, fatty infiltration of infraspinatus, and acromiohumeral interval remained significant risk factors. The extent of retraction (22.2 mm) and the occupation ratio (53.5%) showed highly accurate cutoff values for predicting retear.

Conclusion
Multiple factors influenced the healing process after rotator cuff repair. The best predictors were the extent of retraction and occupation ratio, which could help assist in determining the prognosis after rotator cuff repairs

BACK

Clinical and radiologic outcome of arthroscopic rotator cuff repair: single-row versus transosseous equivalent repair

Jeung Yeol Jeong, MD, Keun Min Park, MD, Shyam Sundar, MD, Jae Chul Yoo, MD'Correspondence information about the author MD Jae Chul YooEmail the author MD Jae Chul Yoo

Journal of Shoulder and Elbow Surgery, Volume 27, Issue 6

Published online: December 27, 2017

https://doi.org/10.1016/j.jse.2017.10.040

Background
There is ongoing controversy regarding the ideal repair modality for rotator cuff tear, with single-row (SR) repair and double-row transosseous equivalent (TOE) repair as the main contenders.

Methods
This study included 415 patients who underwent arthroscopic rotator cuff type I (complete coverage of the greater tuberosity footprint) or II (incomplete coverage) repair between January 2006 and December 2012. SR repair followed the conventional protocol. For double-row TOE repairs, 4 medial sutures were inserted with 2 lateral row anchors. The patients were evaluated for cuff integrity (on magnetic resonance imaging at 6 months postoperatively) and for clinical outcome (pain on the visual analog scale and various scores assessing shoulder function; all logged preoperatively and postoperatively at 3 months, 6 months, and at the last follow-up).

Results
SR and TOE repairs were performed in 46% and 54% of patients, respectively. Type I and type II repairs were performed in 87% and 13% of patients, respectively. The overall incidence of retear assessed on postoperative magnetic resonance imaging was 6.74%. The incidence of retear in the SR group was statistically significantly higher only in large-sized tears (28.57% vs. 4.5%; $P = .028$). Among the postoperative scores at the final follow-up, only the function on the visual analog scale differed significantly between the groups ($P < .01$), with patients treated by TOE repair showing higher scores (8.47 ± 1.70 vs. 7.91 ± 1.66).

Conclusion
In this large cohort study, SR and TOE repair provided similar clinical and radiologic outcomes. Nevertheless, TOE repair was associated with significantly improved healing rate for large-sized tears.

BACK

Arthroscopic Latarjet procedure with double-button fixation: short-term complications and learning curve analysis

Nicolas Bonnevialle, MD, PhD'Correspondence information about the author MD, PhD Nicolas BonnevialleEmail the author MD, PhD Nicolas Bonnevialle, Charles Edouard Thélu, MD, Yves Bouju, MD, Jérôme Vogels, MD, Charles Agout, MD, Pauline Duriez, MD, Vadim Azoulay, MD

Journal of Shoulder and Elbow Surgery, Volume 27, Issue 6

Published online: January 12, 2018

https://doi.org/10.1016/j.jse.2017.12.007

Background
The arthroscopic Latarjet with double-button fixation is a guided procedure recently proposed to treat anterior shoulder instability with glenoid bone loss. The goal of this study was to report intraoperative and early postoperative complications and to analyze the learning curve.

Methods
This was a prospective, nonrandomized study that included 88 patients. Intraoperative or postoperative complications as well as adverse events and operative time were recorded. Clinical outcomes were evaluated at 2 weeks, 1.5 months, and at the last follow-up. Radiologic analysis was based on an immediate postoperative computed tomography scan.

Results
The intraoperative complications or adverse events rate was 3.3%: 1 conversion to open surgery, 1 bone block fracture, and 1 instrumentation problem. The postoperative complication rate was 6.8%: 4 coracoid migrations, and 2 subluxations. None of these complications occurred beyond the 10th case performed. The average operative time significantly decreased with surgical experience ($r = -0.8426$; 95% confidence interval, -0.9074 to -0.7384; $P < .0001$) to reach 76 ± 12 minutes (range, 62-95 minutes) at 30 cases. Radiologically, 90% of the bone blocks were flush and subequatorial beyond the 30th case. At a mean follow-up of 12.6 months (range, 6-24 months), Walch-Duplay and Rowe scores were 80 and 81 points, respectively.

Conclusions
At short-term follow-up, the arthroscopic Latarjet procedure with double-button fixation exhibited a low complication rate. Operative time significantly improved with surgical experience and was optimized after 30 cases. Early clinical results confirmed that this procedure can be safe and reliable.

BACK

American Journal of Sports Medicine (AJSM), Volume 46, Issue 5

Glenoid Bone Loss in Posterior Shoulder Instability: Prevalence and Outcomes in Arthroscopic Treatment

Adam Hines, MD*, Jay B. Cook, MD*, James S. Shaha, MD*, Kevin Krul, MD*, Steve H. Shaha, PhD†, John Johnson, MD*, Craig R. Bottoni, MD*, Douglas J. Rowles, MD*, John M. Tokish, MD‡§‖

First Published January 29, 2018; pp. 1053–1057

http://journals.sagepub.com/toc/ajsb/46/5

Background: Glenoid bone loss is a well-accepted risk factor for failure after arthroscopic stabilization of anterior glenohumeral instability. Glenoid bone loss in posterior instability has been noted relative to its existence in posterior instability surgery. Its effect on outcomes after arthroscopic stabilization has not been specifically evaluated and reported.

Purpose: The purpose was to evaluate the presence of posterior glenoid bone loss in a series of patients who had undergone arthroscopic isolated stabilization of the posterior labrum. Bone loss was then correlated to return-to-duty rates, complications, and validated patient-reported outcomes.

Study Design: Case-control study; Level of evidence, 3.

Methods: A retrospective review was conducted at a single military treatment facility over a 4-year period (2010-2013). Patients with primary posterior instability who underwent arthroscopic isolated posterior labral repair were included. Preoperative magnetic resonance imaging was used to calculate posterior glenoid bone loss using a standardized “perfect circle” technique. Demographics, return to duty, complications, and reoperations, as well as outcomes scores including the Single Assessment Numeric Evaluation and the Western Ontario Shoulder Instability Index (WOSI) scores, were obtained. Outcomes were analyzed across all patients based on percentage of posterior glenoid bone loss. Bone loss was then categorized as below or above the subcritical threshold of 13.5% to determine if bone loss effected outcomes similar to what has been shown in anterior instability.

Results: There were 43 consecutive patients with primary, isolated posterior instability, and 32 (74.4%) completed WOSI scoring. Mean follow-up was 53.7 months (range, 25-82 months) The mean posterior glenoid bone loss was 7.3% (0%-21.5%). Ten of 32 patients (31%) had no appreciable bone loss. Bone loss exceeded 13.5% in 7 of 32 patients (22%), and 2 patients (6%) exceeded 20% bone loss. Return to full duty or activity was nearly 90% overall. However, those with >13.5%, subcritical glenoid bone loss, were statistically less likely to return to full duty (relative risk = 1.8), but outcomes scores, complications, and revision rates were otherwise not different in those with no or minimal bone loss versus those with more significant amounts.

Conclusion: Posterior glenoid bone loss has not previously been evaluated independently relative to patients with shoulder instability repairs. Sixty-nine percent of our patients had measurable bone loss, and 22% had greater than 13.5%, or above subcritical bone loss. While these patients were statistically less likely to return to full duty, the reoperation rate, complications, and patient-reported outcomes between groups were not different.

BACK

Lower Extremity

Arthroscopy, Volume 34, Issue 5

Outcomes of Arthroscopic Management of Trochanteric Bursitis in Patients With Femoroacetabular Impingement: A Comparison of Two Matched Patient Groups

Alexander R. Vap, M.D., Justin J. Mitchell, M.D., Karen K. Briggs, M.P.H., Shannen C. McNamara, B.S., Marc J. Philippon, M.D.

Arthroscopy, May 2018, Volume 34, Issue 5, Pages 1455–1460

https://doi.org/10.1016/j.arthro.2017.10.053

Purpose
To determine the prevalence of chronic trochanteric bursitis (TB) in patient being treated for femoroacetabular impingement (FAI) and determine the effectiveness of arthroscopic bursectomy and iliotibial band lengthening (AB-ITB-L) at the time of hip arthroscopy for FAI.

Methods
Patients diagnosed with primary FAI and chronic TB were included in the study. Patients were included if they underwent hip arthroscopy with labral repair, femoral and/or acetabular osteoplasty, and AB-ITB-L. Patients were matched by age and gender to patients without chronic TB.

Results
The prevalence of chronic TB with FAI was 7% (90/1,278). Females were 5.3 times more likely to have TB compared with males (95% confidence interval: 3.2-8.7). Patients more than 30 years of age were 2.5 times more likely to have TB (95% confidence interval: 1.48-4.4). Of the 90 patients diagnosed with TB, 72 (54 female, 18 male) with an average age of 36.7 years underwent AB-ITB-L at the time of their index hip arthroscopy for FAI. All 72 patients had associated intra-articular pathology consisting of a combined cam and pincer pathology. The TB (average follow-up = 42 ± 9.9 months) and non-TB group (average follow-up = 42 ± 9.1 months) both had significant improvement from preoperative to postoperative scores for Hip Outcome Score Activities Daily Living, Hip Outcome Score Sport, Modified Harris Hip Score, Western Ontario and McMaster Universities Arthritis Index, Short Form (SF)-12 Physical Component score, and SF-12 Mental Component Score. There was no significant difference between the 2 groups in postoperative patient reported outcome scores.

Conclusions
The occurrence of chronic TB in the FAI population, which did not adequately respond to nonoperative management, for a single surgeon high volume hip arthroscopy practice was 7%, and was more commonly seen in women older than 30 years. Patients who undergo concomitant AB-ITB-L for chronic TB report excellent pain relief, and have equivalent results and outcome scores that are not inferior when compared with patients with primary FAI without chronic TB.

Level of Evidence
Level III, retrospective matched case control study.

BACK

Prospective, Observational Study of Opioid Use After Hip Arthroscopy for Femoroacetabular Impingement Syndrome

Daniel Cunningham, M.D., M.H.Sc., Brian Lewis, M.D., Carolyn Hutyra, B.S., Shane Nho, M.D., M.S., Steven Olson, M.D., Richard Mather, M.D., M.B.A.

Arthroscopy, May 2018, Volume 34, Issue 5, Pages 1488–1497.e6

https://doi.org/10.1016/j.arthro.2017.12.005

Purpose
To provide estimates of postoperative opioid use after hip arthroscopy for femoroacetabular impingement (FAI) syndrome and to identify risk factors for increased postoperative opioid use.

Methods
All patients aged at least 18 years who were undergoing hip arthroscopy for FAI syndrome performed by 1 of 2 hip-preservation surgeons between November 2015 and August 2016 were eligible for inclusion in this study. Target minimum enrollment was set at 30 patients per surgeon based on an a priori sample size calculation. Enrolled patients completed the International Hip Outcome Tool, visual analog pain scale, Pain Catastrophizing Scale, abbreviated Patient Health Questionnaire, and questions regarding demographic characteristics and opioid and anti-inflammatory use. Opioid consumption was assessed through pill counting at 2- and 6-week postoperative appointments. Of 80 patients enrolled, 67 had complete 2- and 6-week opioid use data. Patient and operative factors were correlated with outcomes in multivariate models.

Results
Opioid use in the 2 weeks before surgery was significantly associated with higher postoperative opioid use at 2 weeks postoperatively (253.8 additional oral morphine equivalents [OMEs]; 95% confidence interval [CI], 171.2-336.5 additional OMEs; $P < .0001$; $n = 73$) and 6 weeks postoperatively (385.3 additional OMEs; 95% CI, 241.6-529.0 additional OMEs; $P < .0001$; $n = 67$). By 6 weeks postoperatively, 41 of 52 patients (79%) without opioid use in the 2 weeks before surgery used 30 or fewer 5-mg oxycodone pills compared with only 2 of 15 patients (13%) with preoperative use (odds ratio, 24.9; 95% CI, 4.2-148.5; $P < .0001$).

Conclusions
Among patients undergoing hip arthroscopy for FAI syndrome, any opioid use in the 2 weeks preceding surgery was the strongest predictor of opioid use after hip arthroscopy. The impact of preoperative opioid use far exceeded the impact of other baseline patient and operative factors. Assessment of preoperative opioid use could be an important factor in guiding postoperative opioid prescribing.

Level of Evidence
Level II, prospective observational study.

BACK

Comparison of Clinical Outcomes After Anterior Cruciate Ligament Reconstruction Using a Hybrid Graft Versus a Hamstring Autograft

Hong-De Wang, M.D., Shi-Jun Gao, M.D., Ying-Ze Zhang, M.D.

Arthroscopy, May 2018, Volume 34, Issue 5, Pages 1508–1516

https://doi.org/10.1016/j.arthro.2017.11.020

Purpose
This study aimed to compare the clinical outcomes of patients who underwent anterior cruciate ligament (ACL) reconstruction with a hybrid graft versus an autograft after 3 years of follow-up.

Methods
Among 57 patients with an ACL injury who underwent ACL reconstruction, 28 patients received a hybrid graft (gracilis and semitendinosus tendon autograft plus a soft tissue allograft) and 29 patients received an autograft (gracilis and semitendinosus tendon autograft). The 2 groups were compared after a minimum 3-year follow-up regarding International Knee Documentation Committee (IKDC) assessment of knee function and stability, pivot-shift test, Lachman test, and KT-1000 side-to-side differences. The patient-reported Tegner activity score, Lysholm score, and subjective IKDC score were also compared. Graft failures were identified by patient-reported outcomes, physical examinations, or magnetic resonance imaging, and were confirmed on second-look arthroscopy; failure rate was compared between groups.

Results
At final follow-up, the 2 groups significantly differed in pivot-shift test result ($P = .013$) and Lachman test result ($P = .027$). The failure rate tended to be greater in the hybrid graft group (14.3%) than in the autograft group (3.4%) ($P = .148$). All 5 patients with failed graft reconstruction were revised after second-look arthroscopy. The KT-1000 side-to-side differences at final follow-up were significantly inferior in the hybrid graft group (3.5 ± 2.0) compared with the autograft group (2.5 ± 1.0, $P = .024$). The hybrid graft group also had a lower mean Lysholm score ($P = .000$) and subjective IKDC score ($P = .006$) than the autograft group. The mean Tegner activity score was 6.8 ± 0.8 in the hybrid graft group and 6.9 ± 0.6 in the autograft group ($P = .436$).

Conclusions
The knee stability and patient-reported scores in the autograft-irradiated allograft hybrid graft ACL reconstruction group were significantly inferior compared with those in the autograft ACL reconstruction group.

Level of Evidence
Level III, retrospective comparative study.

BACK

Clinical Outcome of Arthroscopic Lateral Retinacular Release for Symptomatic Bipartite Patella in Athletes

Lamberto Felli, M.D., Matteo Formica, M.D., Stefano Lovisolo, M.D., Andrea Giorgio Capello, M.D., Mattia Alessio-Mazzola, M.D.

Arthroscopy, May 2018, Volume 34, Issue 5, Pages 1550–1558

https://doi.org/10.1016/j.arthro.2017.11.038

Purpose
To report the results of arthroscopic lateral retinacular release without excision of the accessory fragment for treatment of symptomatic bipartite patella with a minimum 2-year follow-up.

Methods
We retrospectively reviewed all cases of symptomatic type III bipartite patella confirmed by radiographs, computed tomography, and magnetic resonance imaging and treated with arthroscopic lateral release from 2005 to 2015. Patients with history of knee fractures or surgery, concomitant meniscal or anterior cruciate ligament (ACL) procedures, and severe arthritic changes of the patellofemoral joint were excluded. Patients were assessed by Kujala score, visual analog scale (VAS), Tegner Activity Scale (TAS), and time to return to sporting activities.

Results
Ten patients (11 knees) were clinically reassessed after 69.6 ± 33.3 (range: 25-132; 95% confidence interval [CI]: 47.29-91.99) months from surgery. There was a significant improvement in Kujala ($P < .05$) and VAS scores ($P < .05$), and no differences were found between pre- and postoperative TAS scores ($P > .05$). No complications occurred during the follow-up period. All patients returned to sport after 42.3 ± 11.3 (range: 30-60; 95% CI: 34.71-49.84) days after surgery.

Conclusions
The arthroscopic lateral retinacular release of a symptomatic type III bipartite patella without excision of the accessory fragment allowed early return to sporting activities, with excellent symptom relief. Patients had significantly improved mean Kujala and VAS scores without a decrease in the mean TAS scores.

Level of Evidence
Level IV, case series.

BACK

Clinical Outcomes After Arthroscopic Release of Patellofemoral Arthrofibrosis in Patients With Prior Anterior Cruciate Ligament Reconstruction

Sean P. Calloway, M.D., Clinton J. Soppe, M.D., Bert R. Mandelbaum, M.D.

Arthroscopy, May 2018, Volume 34, Issue 5, Pages 1603–1607

https://doi.org/10.1016/j.arthro.2017.12.011

Purpose
The purpose of this study was to review our results of arthroscopic release in patients diagnosed with refractory patellofemoral arthrofibrosis (PFA) after having undergone anterior cruciate ligament (ACL) reconstruction.

Methods
From 2006 to 2016, all patients who underwent arthroscopic release for refractory PFA after ACL reconstruction were reviewed retrospectively. All patients then completed surveys containing the International Knee Documentation Committee (IKDC) and the Western Ontario and McMaster Universities Arthritis Index (WOMAC) and were asked 2 subjective questions. Patients included in the study exhibited at least one finding of PFA and failed conservative treatment for at least 3 months. Included patients also had a minimum of 12 months of postoperative follow-up after PFA release. Patients who underwent any other concomitant surgery in the same operative setting as arthroscopic release for PFA were excluded from the study.

Results
Thirty-two patients were included in the study. The mean age was 32.8 years (range, 19-58 years) with an average follow-up of 43.6 months (range, 16-98 months). There was a statistically significant increase preoperatively to postoperatively in the IKDC score from 49.6 to 69.4 ($P < .00001$), and 16 of 32 patients (50%) achieved a minimal clinically important difference (MCID). WOMAC scores also significantly increased from 74 to 85.3 ($P < .00001$), with 15 of 32 patients (47%) achieving MCID. Thirty-one patients (97%) reported that the procedure helped, and 25 patients (78%) said they would have the procedure again.

Conclusions
Arthroscopic release, consisting of an extended lateral release, debridement of the notch/fat pad, and manual manipulation of the patella, results in significant increases in validated outcome measures and is well tolerated by patients.

Level of Evidence
Level IV, case series.

BACK

Arthroscopic Ankle Arthrodesis: A 2-15 Year Follow-up Study

Christopher Robert Jones, M.D., Eric Wong, M.D., Gregory R. Applegate, M.D., Richard D. Ferkel, M.D.

Arthroscopy, May 2018, Volume 34, Issue 5, Pages 1641–1649

https://doi.org/10.1016/j.arthro.2017.11.031

Purpose
The purpose of our study was to determine the results of arthroscopic ankle arthrodesis (AAA) and how the procedure affects adjoining joints and functional scores.

Methods
Between 1993 and 2013, 116 patients (120 ankles) underwent AAA. Nineteen ankles were lost to follow-up due to death, insufficient radiographic studies, or inability to contact, resulting in 97 patients (101 ankles). Mean age at surgery was 61.1 years (range, 35.8-79.6 years); mean follow-up was 86 months (range, 24-247 months). Patients were assessed according to the American Orthopaedic Foot and Ankle Society (AOFAS) Ankle and Hindfoot scale, Ankle Osteoarthritis Scale (AOS), and Foot and Ankle Outcome Score (FAOS) and underwent comprehensive clinical and radiographic examinations.

Results
A total of 94.6% of patients achieved ankle fusion on radiographs. Mean AOFAS score was 83.3 (standard deviation [SD], 13.2). Mean modified FAOS score was 87.4 (SD, 10.4). The AOS scoring system showed 75% good/excellent results. According to the Kellgren-Lawrence score and van Dijk osteoarthritis grading scale, 85% and 69% of patients had no change in talonavicular or subtalar grade of osteoarthritis, respectively. There were no cases of deep infection or other serious adverse events. All but 4 patients were able to return to work following AAA.

Conclusions
AAA is an effective operation for treating degenerative ankle disease, even in cases of moderate tibiotalar coronal deformity. At a mean of 86 months postop, nearly three quarters of our patients had good/excellent functional outcomes. Arthritis found in the adjacent hindfoot joints at the time of tibiotalar fusion appears to be a function of preexisting arthritic change and not directly caused by the tibiotalar fusion.

Level of Evidence
Level IV, therapeutic case series.

BACK

Randomized Controlled Trials for Arthroscopy in Degenerative Knee Disease: Was Conservative Therapy Appropriately Tried Prior to Arthroscopy?

Thoralf R. Liebs, M.D., Ph.D., Kai Ziebarth, M.D., Steffen Berger, M.D., Ph.D.

Arthroscopy, May 2018, Volume 34, Issue 5, Pages 1680–1687.e6

https://doi.org/10.1016/j.arthro.2017.12.016

Purpose
We aimed to determine if the randomized controlled trials (RCTs) evaluated in the most recent meta-analysis on arthroscopic surgery for degenerative knee arthritis included documented trials of appropriate conservative treatment prior to randomization.

Methods
We selected all RCTs of the most recent meta-analysis by Brignardello-Petersen and recorded for each RCT, if physiotherapy prior to randomization was mandatory. We compared the treatment effect of arthroscopy in studies in which physiotherapy prior to randomization was mandatory versus studies in which it was not. This review was registered in the PROSPERO database (CRD42017070091).

Results
Of the 13 RCTs in the meta-analysis, there were 2 in which physiotherapy prior to randomization was mandatory. In 1 additional multicenter RCT, prior conservative treatment was mentioned as mandatory in the publication, but not in the protocol. The treatment effects attributed to arthroscopy in terms of short-term pain (P = .0037), short-term function (P = .0309), and long-term function (P = .0012) were larger in studies in which prior physiotherapy was mandatory.

Conclusions
Although the most recent meta-analysis claims that it is based “on patients who do not respond to conservative treatment,” physiotherapy was mandatory prior to randomization only in 2 of the 13 studies. As several orthopaedic guidelines recommend that the first line of treatment in patients with degenerative arthritis of the knee should be conservative, for instance with physiotherapy, and the question of performing arthroscopy arises once conservative treatment fails, 11 of the 13 RCTs failed to adhere to these accepted guidelines. Therefore, patient selection in these 11 studies may not represent the typical indications for arthroscopy, where patients have tried conservative management prior to being offered surgery. When comparing studies where prior physiotherapy was mandatory to studies in which it was not mandatory, there were statistically significant effects favoring arthroscopy in terms of pain in the short term, and for function both in the short and the long term. These findings suggest that the treatment effects attributed to arthroscopy were higher when prior physiotherapy was mandatory. Given these findings, the external validity of most of these RCTs, and the resulting “strong recommendation against the use of arthroscopy in nearly all patients with degenerative knee disease,” is called into question.

Level of Evidence
Level II, systematic review of Level I and II studies.

BACK

Quadriceps Tendon Autograft for Primary Anterior Cruciate Ligament Reconstruction: A Systematic Review of Comparative Studies With Minimum 2-Year Follow-Up

John W. Belk, Matthew J. Kraeutler, M.D., Hayden A. Marshall, Jesse A. Goodrich, B.A., Eric C. McCarty, M.D.

Arthroscopy, May 2018, Volume 34, Issue 5, Pages 1699–1707

https://doi.org/10.1016/j.arthro.2018.01.047

Purpose
To systematically review the literature in an effort to compare outcomes of patients undergoing primary anterior cruciate ligament reconstruction (ACLR) with a quadriceps tendon (QT) autograft versus a bone–patellar tendon–bone (BPTB) or hamstring tendon (HT) autograft.

Methods
A systematic review was performed by searching PubMed, the Cochrane Library, and Embase to locate studies (Level of Evidence I-III) comparing the clinical outcomes of the QT autograft versus the BPTB or HT autograft in patients undergoing primary ACLR. Patients were evaluated based on graft failure rate, examination of knee laxity, and patient-reported outcome scores.

Results
Eight studies (1 Level II, 7 Level III) were identified that met inclusion criteria, including a total of 368 patients undergoing primary ACLR with a QT autograft, 225 with a BPTB autograft, and 150 with an HT autograft. The average follow-up duration for all patients was 2.9 years. Overall, 2.8% of patients (17/603) experienced graft failure. Within the studies that compared the QT versus BPTB autograft, no study found a significant difference in graft failure rate between groups, and the odds ratio for graft failure between QT and BPTB was found to be 1.58 (95% confidence interval: 0.49-5.07; P = .44). Within the studies that compared graft failure rate between the QT and HT autograft, none found significant differences between groups, although a meta-analysis was not performed because of a low number of trials. Two studies found significantly greater postoperative knee laxity in HT patients compared with QT patients (P < .05), although there were no significant differences found in laxity measurements between QT and BPTB patients.

Conclusions
Patients undergoing primary ACLR with either a QT, BPTB, or HT autograft can all be expected to experience improvement in clinical outcomes. QT patients experienced less knee laxity postoperatively compared with HT patients, although no significant differences were found in graft failure rate between groups.

Level of Evidence
Level III, systematic review of Level II and III studies.

BACK

Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA), Volume 26, Issue 5

The iliotibial band and anterolateral capsule have a combined attachment to the Segond fracture

Marcio Albers, Humza Shaikh, Elmar Herbst, Kentaro Onishi, Kanto Nagai, Volker Musahl, Freddie H. Fu

KSSTA, May 2018, Volume 26, Issue 5, pp 1305-1310

https://link.springer.com/article/10.1007/s00167-017-4549-z

Abstract
The purpose of this report was to describe the injury mechanism, surgical findings, and outcomes in a 21-year-old professional female football player who presented with a complete anterior cruciate ligament (ACL) rupture and Segond fracture. Interview and video analysis were performed to elicit the injury mechanism. Clinical examination and imaging revealed a complete ACL tear, Segond fracture, lateral meniscus tear, MCL sprain, and posterolateral corner sprain. Examination under anaesthesia revealed Grade 2 pivot shift and varus/valgus instability. Surgical examination revealed attachment of the posterior fibres of the iliotibial band and the lateral capsule to the Segond fragment. The fracture was reduced with suture fixation, and an anatomic ACL reconstruction was performed. Follow-up demonstrated rotatory and anterior tibial translation stability, and imaging at 7 months post-operatively revealed no movement and continued osseous integration of the Segond fragment.

Level of Evidence
V.

BACK

No clinical diferences between anteromedial portal and transtibial technique for femoral tunnel positioning in anterior cruciate ligament reconstruction: a prospective randomized, controlled trial

Peter MacDonald, Chris Kim, Sheila McRae, Jef Leiter, Ryan Khan, Daniel Whelan

KSSTA, May 2018, Volume 26, Issue 5, pp 1335-1342

https://link.springer.com/content/pdf/10.1007%2Fs00167-017-4664-x.pdf

Purpose
The anteromedial (AMP) portal technique was introduced to position the femoral tunnel in anterior cruciate ligament (ACL) reconstruction to more closely replicate the original ACL footprint compared to the transtibial (TT) approach. Few randomized trials have evaluated differences in these techniques with respect to clinical outcomes. The purpose of this study was to determine if there are any differences in clinical outcome between the AMP and TT approaches.

Methods
This is a single-blinded, prospective, randomized controlled trial. Participants were randomized to undergo ACL reconstruction using the AMP or TT approach. The primary outcome measure was the ACL quality of life (ACL-QOL), and secondary outcomes were the IKDC knee assessment, side-to-side difference in anterior–posterior knee laxity (KT-1000) and tunnel orientation (X-ray findings) at preoperative, 3, 6, 12, and 24 months postoperative. Statistical comparisons were performed using a series of *t* tests for independent groups with equal variance.

Results
Ninety-six participants were consented and randomized between 2007 and 2011 with eight excluded postrandomization. Mean (SD) preoperative ACL-QOL was 33 (13) for TT and 36 (17) for AMP and improved significantly ($p < 0.001$) in both groups to 79 (18) and 78 (18) at 24 months postoperative, respectively. The preoperative median IKDC grade for both groups was C and improved similarly in both groups at 24 months (n.s.). There was no side-to-side difference in knee laxity based on KT-1000 measurements with a mean (SD) 1 (3) mm between affected and unaffected limbs in the TT group compared to 1 (3) mm for the AMP group. A significant difference was found in femoral tunnel orientation with the AMP group at 43° (7) and the TT group 58° (8) in the coronal plane ($p < 0.001$).

Conclusion
No differences in clinical outcome were found when comparing AMP to TT in primary ACL reconstruction using a STG graft. This prospective randomized controlled trial suggests surgeons can use either method without significantly compromising clinical outcome.

Level of evidence
I.

BACK

Anatomic and non-anatomic anterior cruciate ligament posterolateral bundle augmentation affects graft function

Can Yapici, Levent Surer, Kenan Keklikci, Dongliang Shi, Soheil Sabzevari, Monica A. Linde, Patrick Smolinski, Freddie H. Fu

KSSTA, May 2018, Volume 26, Issue 5, pp 1343-1348

https://link.springer.com/article/10.1007/s00167-017-4659-7

Purpose
The purpose of this study is to compare knee laxity and graft function (tissue force) between anatomic and non-anatomic posterolateral (PL) bundle augmentation.

Methods
Twelve (*n* = 12) fresh-frozen mature, unpaired porcine knees were tested using a robotic testing system. Four knee states were compared: (a) intact anterior cruciate ligament (ACL), (b) deficient PL and intermediate bundles, (c) anatomic PL augmentation, and (d) non-anatomic PL augmentation. Anterior tibial translation (ATT), internal rotation (IR) and external rotation (ER), and the in situ tissue force were measured under an 89.0-N anterior tibial load and 4.0-N m internal and external tibial torques.

Results
Both anatomic and non-anatomic PL augmentation restored the ER, IR, and ATT of the intact knee at all knee flexion angles (n.s.). Both anatomic and non-anatomic PL augmentation restored the in situ tissue force of the ACL during ER and IR loading and ATT loading at all knee flexion angles except at 60° of knee flexion, where the non-anatomic PL augmentation did not restore the in situ tissue force of the ACL during external rotation loading and the anatomic PL augmentation did not restore the in situ tissue force of the ACL during IR loading. Furthermore, there were no differences in ATT, IR, ER, and in situ tissue force under anterior tibial loading, IR and ER loading between the two reconstruction groups.

Conclusion
There were no significant differences between anatomic and non-anatomic PL augmentation using the porcine knee model.

BACK

ACL reconstruction using 5- or 6-strand hamstring autograft provides graft's diameter bigger than 8 mm

Vytautas Tutkus, Karolis Kluonaitis, Simona Silove, Janina Tutkuviene

KSSTA, May 2018, Volume 26, Issue 5, pp 1349-1356

https://link.springer.com/article/10.1007/s00167-017-4668-6

Purpose
The objective of this study was to measure the diameters of 5- and 6-strand hamstring autografts and to evaluate the predictability of their thickness by other body size indices.

Methods
Data were collected from 122 skeletally mature adult patients, who had undergone arthroscopic anterior cruciate ligament reconstruction using only 5- or 6-strand hamstring autografts. The diameters of tibial and femoral ends of the grafts were measured with the precision of 0.5 mm. Multiple linear regression was performed to determine the relationship between autograft's thickness and body size indices.

Results
The diameter of the femoral end of the 5-strand graft in male/female patients on average was 8.9/8.3 mm, while the femoral end of the 6-strand graft—9.3/8.5 mm (respectively). In 98.4% of the cases, 5- or 6-strand hamstring autografts were significantly thicker than 8 mm. In 5-strand group, a significant positive correlation was detected between the diameter of autograft's femoral end and patient's height ($r = 0.55$; $p < 0.001$), weight ($r = 0.60$; $p < 0.001$) and BMI ($r = 0.43$; $p < 0.01$). The 6-strand group had statistically significant correlations between the femoral end of the graft and height ($r = 0.53$; $p < 0.001$), and femoral end of the graft and weight ($r = 0.50$; $p < 0.001$).

Conclusions
Hamstring autografts were significantly thicker than 8 mm. Taller and heavier persons tended to have greater diameters of hamstring autografts; however, to better predict the diameter of autograft, body composition should be studied in relation to autograft's size. Preparation of 5- or 6-strand graft (using all the length of hamstring tendons) provides almost 100% of probability to obtain graft's diameter bigger than 8 mm.

Level of evidence
Level III.

BACK

Increased incidence of anterior cruciate ligament revision surgery in paediatric verses adult population

Diego Costa Astur, Charles Marcon Cachoeira, Tierri da Silva Vieira, Pedro Debieux, Camila Cohen Kaleka, Moisés Cohen

KSSTA, May 2018, Volume 26, Issue 5, pp 1362-1366

https://link.springer.com/article/10.1007/s00167-017-4727-z

Purpose
To evaluate the anterior cruciate ligament graft failure rate in a population of 1376 patients submitted to single-bundle anterior cruciate ligament reconstruction procedure. It was hypothesized that the younger the patient, the greater the chance of a new anterior cruciate ligament graft ligament injury.

Methods
A retrospective chart review was performed on patients who had SB anterior cruciate ligament reconstruction between the years, 2001 and 2016, with a minimum post-operative follow-up period of 6 months. The patient population was divided into three groups, according to age: group 1—under 16 years old; group 2—between 16 and 18 years old; and group 3—older than 18 years old. Data collected included sex, laterality and graft choice data.

Results
In group 1 (under 16 years old), there were 61 primary ACL surgeries performed and 15 (24.6%) revision ACL surgeries. In group 2 (between 16 and 18 years old), there was 57 primary ACL procedures, of which 10 (17.5%) were revisions. In the group 3 (older than 18 years of age), 1258 surgeries were done with 116 (9.2%) revisions.

Conclusion
The rate of ACL revision surgery in patients under 16 years of age was significantly higher than that found in patients older than 18 years old. When compared to the population between 16 and 18 years old, there were a higher number of failure cases, however, statistically non-significant.

Level of evidence
IV.

BACK

Restoring tibiofemoral alignment during ACL reconstruction results in better knee biomechanics

Frantzeska Zampeli, Ioannis Terzidis, João Espregueira-Mendes, Jim-Dimitris Georgoulis, Manfred Bernard, Evangelos Pappas, Anastasios D. Georgoulis

KSSTA, May 2018, Volume 26, Issue 5, pp 1367-1374

https://link.springer.com/article/10.1007/s00167-017-4742-0

Purpose

Anterior cruciate ligament (ACL) reconstruction (ACLR) aims to restore normal knee joint function, stability and biomechanics and in the long term avoid joint degeneration. The purpose of this study is to present the anatomic single bundle (SB) ACLR that emphasizes intraoperative correction of tibiofemoral subluxation that occurs after ACL injury. It was hypothesized that this technique leads to optimal outcomes and better restoration of pathological tibiofemoral joint movement that results from ACL deficiency (ACLD).

Methods

Thirteen men with unilateral ACLD were prospectively evaluated before and at a mean follow-up of 14.9 (SD = 1.8) months after anatomic SB ACLR with bone patellar tendon bone autograft. The anatomic ACLR replicated the native ACL attachment site anatomy and graft orientation. Emphasis was placed on intraoperative correction of tibiofemoral subluxation by reducing anterior tibial translation (ATT) and internal tibial rotation. Function was measured with IKDC, Lysholm and the Tegner activity scale, ATT was measured with the KT-1000 arthrometer and tibial rotation (TR) kinematics were measured with 3Dmotion analysis during a high-demand pivoting task.

Results

The results showed significantly higher TR of the ACL-deficient knee when compared to the intact knee prior to surgery (12.2° ± 3.7° and 10.7° ± 2.6° respectively, $P = 0.014$). Postoperatively, the ACLR knee showed significantly lower TR as compared to the ACL-deficient knee (9.6°±3.1°, P = 0.001) but no difference as compared to the control knee (n.s.). All functional scores were significantly improved and ATT was restored within normal values ($P < 0.001$).

Conclusions

Intraoperative correction of tibiofemoral subluxation that results after ACL injury is an important step during anatomic SB ACLR. The intraoperative correction of tibiofemoral subluxation along with the replication of native ACL anatomy results in restoration of rotational kinematics of ACLD patients to normal levels that are comparable to the control knee. These results indicate that the reestablishment of tibiofemoral alignment during ACLR may be an important step that facilitates normal knee kinematics postoperatively.

Level of evidence

Level II, prospective cohort study.

BACK

Anatomic double bundle ACL reconstruction outperforms any types of single bundle ACL reconstructions in controlling dynamic rotational laxity

A. Maeyama, Y. Hoshino, Y. Kato, A. Debandi, P. Lertwanich, J. H. Wang, P. Smolinski, F. H. Fu

KSSTA, May 2018, Volume 26, Issue 5, pp 1414-1419

https://link.springer.com/article/10.1007/s00167-017-4781-6

Purpose
To compare the different types of ACL reconstructions in terms of knee dynamic laxity evaluated by acceleration.

Methods
Sixteen fresh frozen cadaveric knees were used. Pivot shift test was manually performed while monitoring the tibial acceleration by use of a triaxial accelerometer. The test was repeated before and after the ACL resection and reconstruction. Three types of ACL reconstruction were tested: (1) Anatomic Single-Bundle reconstruction (n = 8), the graft was placed at the center of the ACL footprint for the both femoral and tibial sides (tunnel diameter: 8mm); (2) Conventional Single-Bundle reconstruction (n = 8), the graft was placed from the tibial PL footprint to femoral high AM position (tunnel diameter: 8mm) and (3) Anatomic Double-Bundle reconstruction (n = 8). The acceleration in each of three x-y-z directions and the overall magnitude of acceleration was calculated to evaluate dynamic rotational laxity and compared between different ACL reconstructions.

Results
The overall magnitude of acceleration was significantly different between ACL intact and deficient knees ($p < 0.0001$). The acceleration was reduced by the DB ACL reconstruction to the intact level (n.s.), but the two SB ACL reconstruction failed to achieve the intact level of the acceleration ($p = 0.0002$non-anatomic SB, $p < 0.0001$ anatomic SB).

Conclusion
The anatomic DB reconstruction better restores dynamic rotational laxity when compared to the SB ACL reconstructions no matter if the tunnel placement was anatomic. The anatomic DB reconstruction better restores dynamic rotational laxity when compared to both anatomic and non-anatomic SB ACL reconstruction. For this reason anatomic DB ACL reconstruction is recommended for cases where rotational laxity is an issue.

BACK

American Journal of Sports Medicine (AJSM), Volume 46, Issue 5

Effects of Arthroscopy for Femoroacetabular Impingement Syndrome on Quality of Life and Economic Outcomes

Richard C. Mather, III, MD, MBA*†, Shane J. Nho, MD, MS‡, Andrew Federer, MD†, Berna Demiralp, PhD§, Jennifer Nguyen, MPP§, Asha Saavoss, BA§, Michael J. Salata, MD‖, Marc J. Philippon, MD¶, Asheesh Bedi, MD#, Christopher M. Larson, MD**, J.W. Thomas Byrd, MD††, Lane Koenig, PhD§

First Published March 13, 2018; pp. 1205–1213

http://journals.sagepub.com/doi/full/10.1177/0363546518757758

Background: The diagnosis and treatment of femoroacetabular impingement (FAI) have increased steadily within the past decade, and research indicates clinically significant improvements after treatment of FAI with hip arthroscopy.

Purpose: This study examined the societal and economic impact of hip arthroscopy by high-volume surgeons for patients with FAI syndrome aged <50 years with noncontroversial diagnosis and indications for surgery.

Study Design: Economic and decision analysis; Level of evidence, 2.

Methods: The cost-effectiveness of hip arthroscopy versus nonoperative treatment was evaluated by calculating direct and indirect treatment costs. Direct cost was calculated with Current Procedural Terminology medical codes associated with FAI treatment. Indirect cost was measured with the patient-reported data of 102 patients who underwent arthroscopy and from the reimbursement records of 32,143 individuals between the ages of 16 and 79 years who had information in a private insurance claims data set contained within the PearlDiver Patient Records Database. The indirect economic benefits of hip arthroscopy were inferred through regression analysis to estimate the statistical relationship between functional status and productivity. A simulation-based approach was then used to estimate the change in productivity associated with the change in functional status observed in the treatment cohort between baseline and follow-up. To analyze cost-effectiveness, 1-, 2-, and 3-way sensitivity analyses were performed on all variables in the model, and Monte Carlo analysis evaluated the impact of uncertainty in the model assumptions.

Results: Analysis of indirect costs identified a statistically significant increase of mean aggregate productivity of $8968 after surgery. Cost-effectiveness analysis showed a mean cumulative total 10-year societal savings of $67,418 per patient from hip arthroscopy versus nonoperative treatment. Hip arthroscopy also conferred a gain of 2.03 quality-adjusted life years over this period. The mean cost for hip arthroscopy was estimated at $23,120 ± $10,279, and the mean cost of nonoperative treatment was estimated at $91,602 ± $14,675. In 99% of trials, hip arthroscopy was recognized as the preferred cost-effective strategy.

Conclusion: FAI syndrome produces a substantial economic burden on society that may be reduced through the indirect cost savings and economic benefits from hip arthroscopy.

BACK

Miscellaneous

Arthroscopy, Volume 34, Issue

BACK

Clinical Orthopaedics and Related Research (CORR), Volume 476, Issue 5

Does the Alpha-defensin Immunoassay or the Lateral Flow Test Have Better Diagnostic Value for Periprosthetic Joint Infection? A Systematic Review

Eriksson, Hannah, K., MD; Nordström, Jakob, MS; Gabrysch, Katja, PhD; Hailer, Nils, P., MD; Lazarinis, Stergios, MD, PhD

Clin Orthop Relat Res 2018, Volume 476, Issue 5

http://www.clinorthop.org/articles/10.1007/s11999.0000000000000244

Background: Measuring alpha-defensin concentrations in synovial fluid may help to diagnose periprosthetic joint infection (PJI). There are two commercially available methods for measuring alpha-defensin in synovial fluid: the enzyme-linked immunosorbent assay-based Synovasure® alpha-defensin immunoassay, which gives a numeric readout within 24 hours, and the Synovasure lateral flow test, which gives a binary readout within 20 minutes. There is no compilation of the existing literature to support the use of one of these two tests over the other.

Questions/purposes: Does the immunoassay or the lateral flow test have better diagnostic value (sensitivity and specificity) in diagnosing PJI?

Methods: We followed PRISMA guidelines and identified all studies on alpha-defensin concentration in synovial fluid as a PJI diagnostic marker, indexed to April 14, 2017, in PubMed, JSTOR, Google Scholar, and OVID databases. The search retrieved 1578 records. All prospective and retrospective studies on alpha-defensin as a PJI marker (PJI classified according to the criteria of the Musculoskeletal Infection Society) after THA or TKA were included in the analysis. All studies used only one of the two commercially available test methods, but none of them was comparative. After excluding studies with overlapping patient populations, four studies investigating the alpha-defensin immunoassay and three investigating the lateral flow test remained. Alpha-defensin immunoassay studies included 482 joints and lateral flow test studies included 119. The quality of the trials was assessed according to the Quality Assessment of Diagnostic Accuracy Studies (QUADAS-2) tool. The heterogeneity among studies was evaluated by the I2 index, indicating that the heterogeneity of the included studies was low. Pooled sensitivity, specificity, positive and negative likelihood ratios, and receiver operating curves were calculated for each method and compared with each other.

Results: The alpha-defensin immunoassay had superior overall diagnostic value compared with the lateral flow test (area under the curve, 0.98 versus 0.75) with higher sensitivity (96% [90%-98%] versus 71% [55%-83%], $p < 0.001$), but no difference in specificity with the numbers available (96% [93%-97%] versus 90% [81%-95%], $p = 0.060$).

Conclusions: Measurement of alpha-defensin in synovial fluid is a valuable complement to existing diagnostic criteria, and the immunoassay test detects PJI more accurately than the lateral flow test. The lateral flow test has lower sensitivity, making it difficult to rule out infection, but its relatively high specificity combined with the advantage of a quick response time can make it useful to rule in infection perioperatively.

Level of Evidence: Level III, diagnostic study.

BACK

Bone and Joint Journal (BJJ), Volume 100, issue 5

Does virtual reality simulation have a role in training trauma and orthopaedic surgeons?

J. D. Bartlett, J. E. Lawrence, M. E. Stewart, N. Nakano, V. Khanduja

Cite this article: Bone Joint J 2018;100-B:559–65.

https://doi.org/10.1302/0301-620X.100B5.BJJ-2017-1439

Aims
The aim of this study was to assess the current evidence relating to the benefits of virtual reality (VR) simulation in orthopaedic surgical training, and to identify areas of future research.

Materials and Methods
A literature search using the MEDLINE, Embase, and Google Scholar databases was performed. The results' titles, abstracts, and references were examined for relevance.

Results
A total of 31 articles published between 2004 and 2016 and relating to the objective validity and efficacy of specific virtual reality orthopaedic surgical simulators were identified. We found 18 studies demonstrating the construct validity of 16 different orthopaedic virtual reality simulators by comparing expert and novice performance. Eight studies have demonstrated skill acquisition on a simulator by showing improvements in performance with repeated use. A further five studies have demonstrated measurable improvements in operating theatre performance following a period of virtual reality simulator training.

Conclusion
The demonstration of 'real-world' benefits from the use of VR simulation in knee and shoulder arthroscopy is promising. However, evidence supporting its utility in other forms of orthopaedic surgery is lacking. Further studies of validity and utility should be combined with robust analyses of the cost efficiency of validated simulators to justify the financial investment required for their use in orthopaedic training.

BACK